Nome,
Norway

A 100 Years Playbook

To guide how the Green Mineral Park can sustainably grow over time - socially, ecologically, and spatially.

E ECOLOGICAL LAYER
SP SPATIAL LAYER
SO SOCIAL LAYER

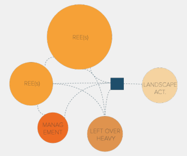
PHASE 01

SEEDING THE PARK: ECOLOGICAL AND SPATIAL FUNDATIONS

0-10 YEARS

Early Actors & Circular Synergies

How can we rethink mining in a time of ecological urgency, spatial fragility, and shifting global economies? The first phase of the Green Mineral Park includes site preparation, construction, and the beginning of REE operations. Although it covers only a small part of the final masterplan, this phase is crucial for **establishing robust spatial, social and ecological foundations for the park's long-term development.** Key strategies include protecting biodiversity, establishing shared infrastructure, and creating early spaces of cross collaboration. REE actor(s) are located around a collaborative node. From day one, some by-product processors are active, mainly transforming coarse rock into roads and building foundations for future development. Landscape actors are also present early, as caretakers of the land, and catalysts of early stage civic life and landfills regeneration.

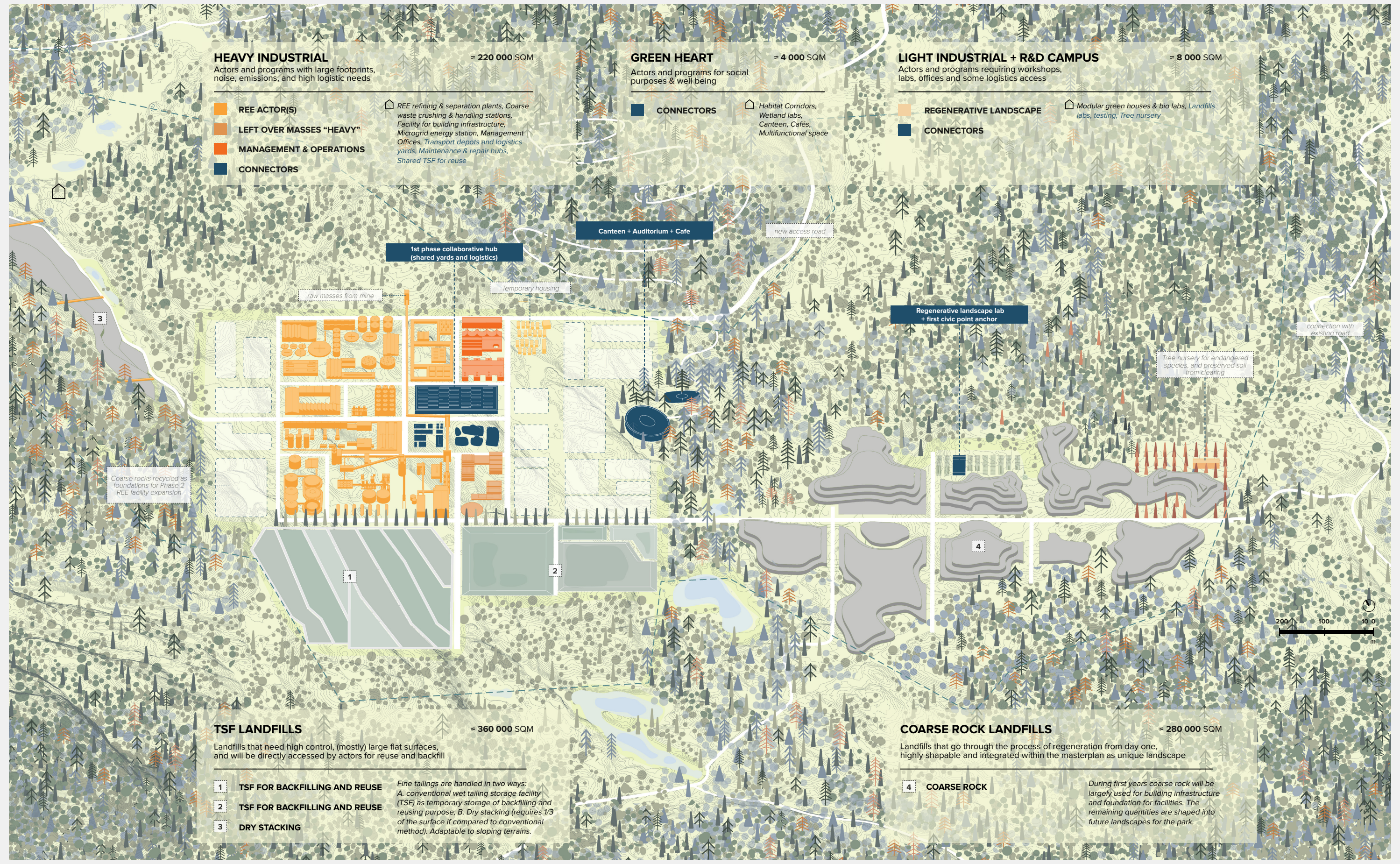


Wider Impact

We chose the Vindsås site for its relative flatness - enabling more flexible land use and landfill shaping - and for its central position within the long-term territorial development of Nome Municipality (but the vision could fit all other sites). In Phase 1, new access road connect with Ulefoss enabling early infrastructure upgrades, including a potential school and new housing linked to the park. The first phase activates local contractors, creates technical jobs, and lays the foundation for long-term regional collaboration.

- Upgrade part of existing infrastructure for new access road
- Ulefoss school & education services connected to the park
- Residential cluster in between Ulefos and Lunde and regeneration of Lannavagen as high quality public space

VISION


Canteen + Auditorium + Cafe
1st phase collaborative hub (shared yards and logistics)
new access road
raw masses from mine
Temporary housing
Regenerative landscape lab + first civic point anchor
connection with existing road
Tree nursery for endangered species, and preserved soil from clearing
Coarse rocks recycled as foundations for Phase 2 REE facility expansion
1
2
3
4
200
100
10 0
m

HEAVY INDUSTRIAL ≈ **220 000** SQM
Actors and programs with large footprints, noise, emissions, and high logistic needs

■ REE ACTOR(S)
■ LEFT OVER MASSES "HEAVY"
■ MANAGEMENT & OPERATIONS
■ CONNECTORS

REE refining & separation plants, Coarse waste crushing & handling stations, Facility for building infrastructure, Microgrid energy station, Management Offices, Transport depots and logistics yards, Maintenance & repair hubs, Shared TSF for reuse

GREEN HEART ≈ **4 000** SQM
Actors and programs for social purposes & well being

■ CONNECTORS

Habitat Corridors, Wetland labs, Canteen, Cafés, Multifunctional space

LIGHT INDUSTRIAL + R&D CAMPUS ≈ **8 000** SQM
Actors and programs requiring workshops, labs, offices and some logistics access

■ REGENERATIVE LANDSCAPE
■ CONNECTORS

Modular green houses & bio labs, Landfills labs, testing, Tree nursery

TSF LANDFILLS ≈ **360 000** SQM
Landfills that need high control, (mostly) large flat surfaces, and will be directly accessed by actors for reuse and backfill

1 TSF FOR BACKFILLING AND REUSE
2 TSF FOR BACKFILLING AND REUSE
3 DRY STACKING

Fine tailings are handled in two ways: A. conventional wet tailing storage facility (TSF) as temporary storage of backfilling and reusing purpose; B. Dry stacking (requires 1/3 of the surface if compared to conventional method). Adaptable to sloping terrains.

COARSE ROCK LANDFILLS ≈ **280 000** SQM
Landfills that go through the process of regeneration from day one, highly shapable and integrated within the masterplan as unique landscape

4 COARSE ROCK

During first years coarse rock will be largely used for building infrastructure and foundation for facilities. The remaining quantities are shaped into future landscapes for the park.

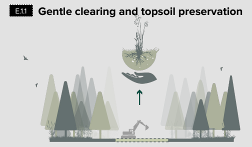
GUIDING PRINCIPLES ↓

ECOLOGICAL LAYER →

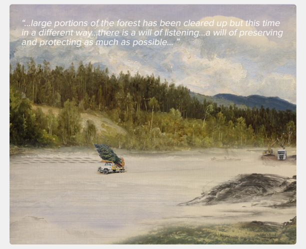
E.1 PROTECT BIODIVERSITY AND EMBED ECOLOGICAL INTELLIGENCE FROM DAY ONE

Design starts with a respectful relationship with the site's ecosystems. By identifying and safeguarding endangered species, biodiversity corridors and soil, managing runoff and terrain proactively, and shape landforms with long-term value

E.1.1 Gentle clearing and topsoil preservation

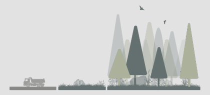


Deforestation and excavation should be done incrementally, allowing ecosystems to adapt gradually and correct negative impacts. Rich soil and biomass should be stored or reused later in replanting or technosol production. Introduce "tree nursery" to deal with trees that support significant wildlife activity e.g. nesting and feeding.



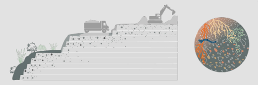
"...large portions of the forest has been cleared up but this time in a different way...there is a will of listening...a will of preserving and protecting as much as possible..."

E.1.2 Buffer design for wildlife adaptation



Leave 10–30m wide forest belts around the cleared area to reduce edge effects, windthrow, and desiccation. Gradual transitions using native shrubs or secondary growth help wildlife adapt and use the new boundaries. Use native species to maintain connectivity and serve as windbreaks.

E.1.3 Progressive rehabilitation of coarse rock deposit from day 1



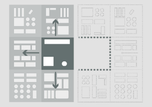
Gradual greening of coarse rock landfills with integration of topsoil (top layer of soil saved prior to clearing) + gradual addition of soil mixed with waste to improve stability and facilitate plant growth from the outset. From day one - regeneration and operation happen at the same time.

SPATIAL LAYER →

SP.1 ESTABLISH THE FOUNDATION FOR A COLLABORATIVE INFRASTRUCTURE AND COMPACT SPATIAL LAYOUT

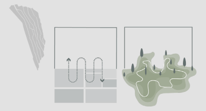
A clear, shared structure makes future coexistence possible. Early infrastructures should serve multiple actors, minimize land use, and set up compact zones that grow together, not apart. Space is seen as a negotiable framework, not a finished map.

SP.1.1 Compact and central-located collaborative hub



Build centralised backbone for collaborative infrastructure: shared depots and crushing yards, roads, belts, machine repairing, parking, warehouse, material management etc. Strategic central location to allow easy expansion in Phase 2 and serve upcoming actors.

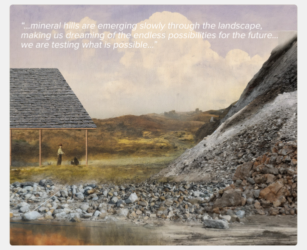
SP.1.2 Strategic placement of first landfills to facilitate future integration



1. Differentiate circular landfill strategies according to type of landfills (TSF, coarse rock)
2. Position landfills in proximity to actors that will use them either as recreational spaces or as a resource for circular production
3. For dry stacked detached landfill (west) use geomorphic approach by following existing terrain topography

SP.1.3 Introducing "connectors"

*Introduce the concept of '**Connectors**' as key facilities or spaces that are shared by different actors and that facilitate interaction and interchange across them. Connectors can be infrastructural, social, or both.*



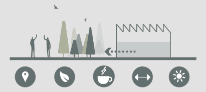
"...mineral hills are emerging slowly through the landscape, making us dreaming of the endless possibilities for the future... we are testing what is possible..."

SOCIAL LAYER →

SO.1 EMBED CARE AND OPENNESS FROM DAY ONE

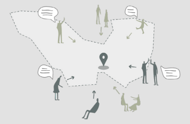
Even in a provisional or industrial stage, care matters. Providing accessible, and inclusive spaces that prioritise wellbeing & safety for workers. Providing civic presence early signals that the park belongs to many, not just industry, but also innovators, locals, and future publics.

SO.1.1 Well-being workplace

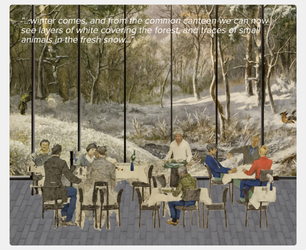


Focus on well-being from the start. Provide generous access to daylight, greenery and social areas from early construction phase. Design for comfort and inclusivity.

SO.1.2 First civic anchor point

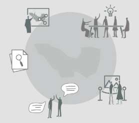


Activate a first civic node with soft programming by establishing a small, flexible anchor pavilion near the piloting landscape lab - a place for workshops, knowledge sharing, temporary exhibitions and events, signaling openness from the start.



"...winter comes, and from the common canteen we can now see layers of white covering the forest, and traces of small animals in the fresh snow..."

SO.1.3 TOOL: Engagement Toolkit



e.g. Participatory Mapping, CoDesign Sessions, Onsite Walks, Active Forum, School Partnerships, On-site Residencies. Implement a variety of engagements processes to ensure a fair and inclusive process for local citizens and wider stakeholders. Invite them to help shape the vision. Engage younger generations as future users.

*collages are inpired by paintings of Norwegian landscapes: The Labro Fallsby by Thomas Fearnley (1836), From Jæren by Kitty Kielland (1880)

Nome,
Norway

A 100 Years Playbook

To guide how the Green Mineral Park can sustainably grow over time - socially, ecologically, and spatially.

DESIGN STRATEGY
TOOL/BENCHMARK
BIODIVERSITY BOOST
CIRCULARITY BOOST

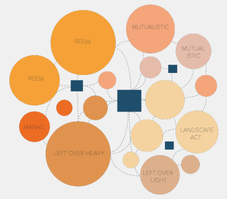
PHASE 02

A CIRCULAR ECOSYSTEM: SCALING SYNERGIES AND SHARED GROUNDS

10+ YEARS

Poly Actors & Circular Synergies

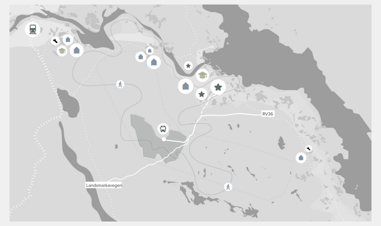
The second phase builds on the foundation of the first, focusing on the full spatial and programmatic expansion of the Nome Mineral Park. This is the phase of actor growth, landfill shaping, and the scaling of circular synergies established early on. Key actors are grouped across shared facilities and *"connectors"* to maximise material exchange and create an efficient, flexible spatial framework. Here the *Playbook* demonstrates **how spatial organisation and collaborative infrastructure can redefine the idea of a mineral facility without compromising functionality**. Furthermore, it is shown how wild nature (the forest) and synthetic one (the landfill) can be actively integrated in the park, facilitating biodiversity and creating new unexpected cultural and recreational landscapes.



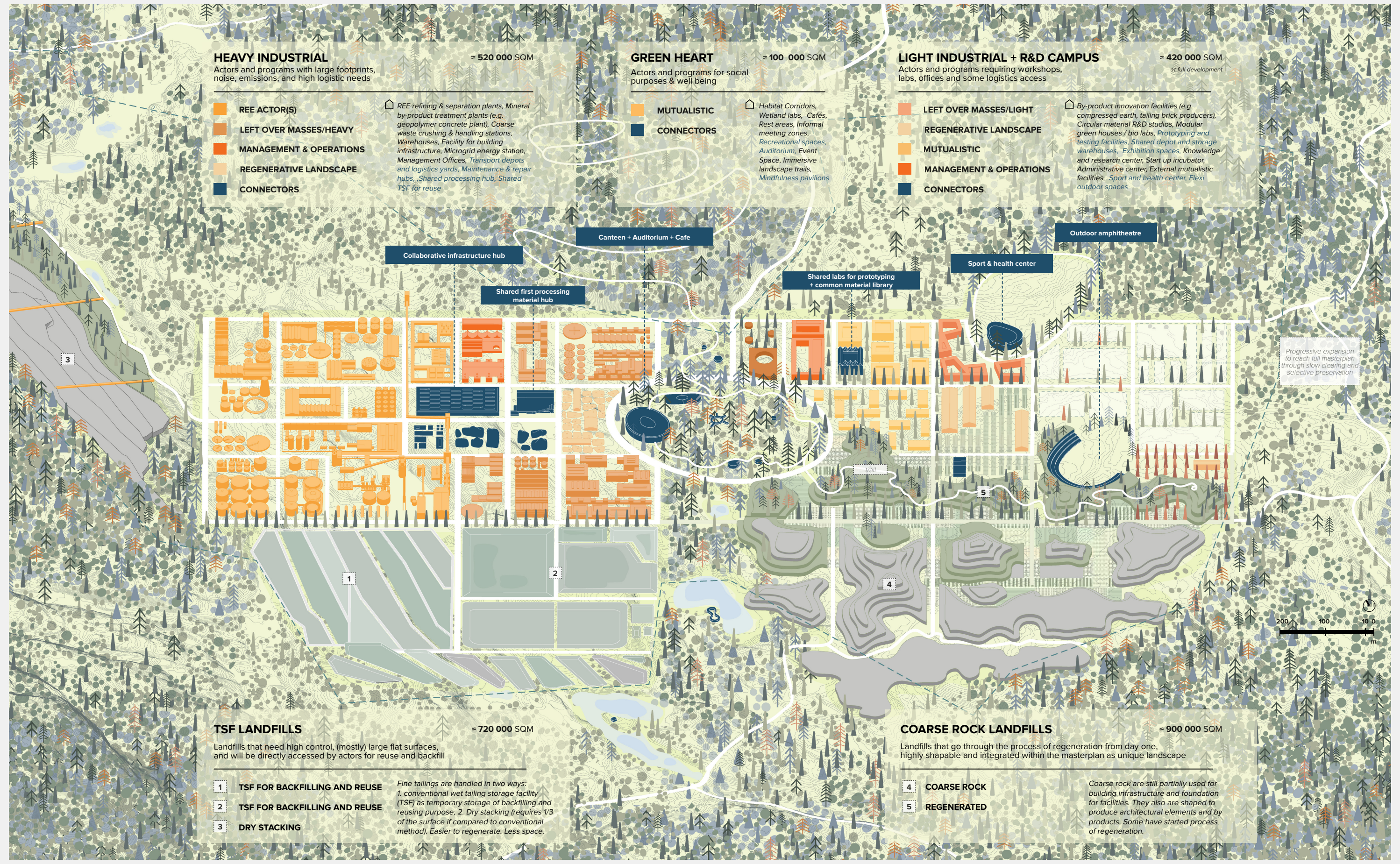
Wider Impact

As the park scales up, regional infrastructure strengthens: improved city roads, expanded services in Ulefoss, and stronger logistics capacity support both industrial actors and residents. A new material innovation hub positions Nome as a circularity leader. A large public forest trail links the park to the wider landscape and invites visitors from the region and beyond.

- Extend city road networks and access to park
- Improved services across Lunde and Ulefoss
- Nome Mineral Hub with activities connected to Mineral Park e.g. showroom of reused materials
- Large thematic forest trails as recreational offer for the region



VISION


Collaborative infrastructure hub
Shared first processing material hub
Canteen + Auditorium + Cafe
Shared labs for prototyping + common material library
Sport & health center
Outdoor amphitheatre
Progressive expansion to reach full masterplan through slow clearing and selective preservation
trail
1
2
3
4
5
200
100
10 0
m

HEAVY INDUSTRIAL ≈ **520 000** SQM
Actors and programs with large footprints, noise, emissions, and high logistic needs

■ REE ACTOR(S)
■ LEFT OVER MASSES/HEAVY
■ MANAGEMENT & OPERATIONS
■ REGENERATIVE LANDSCAPE
■ CONNECTORS

REE refining & separation plants, Mineral by-product treatment plants (e.g. geopolymer concrete plant), Coarse waste crushing & handling stations, Warehouses, Facility for building infrastructure, Microgrid energy station, Management Offices, Transport depots and logistics yards, Maintenance & repair hubs, Shared processing hub, Shared TSF for reuse

GREEN HEART ≈ **100 000** SQM
Actors and programs for social purposes & well being

■ MUTUALISTIC
■ CONNECTORS

Habitat Corridors, Wetland labs, Cafés, Rest areas, Informal meeting zones, Recreational spaces, Auditorium, Event Space, Immersive landscape trails, Mindfulness pavilions

LIGHT INDUSTRIAL + R&D CAMPUS ≈ **420 000** SQM
at full development
Actors and programs requiring workshops, labs, offices and some logistics access

■ LEFT OVER MASSES/LIGHT
■ REGENERATIVE LANDSCAPE
■ MUTUALISTIC
■ MANAGEMENT & OPERATIONS
■ CONNECTORS

By-product innovation facilities (e.g. compressed earth, tailing brick producers), Circular material R&D studios, Modular green houses / bio labs, Prototyping and testing facilities, Shared depot and storage warehouses, Exhibition spaces, Knowledge and research center, Start up incubator, Administrative center, External mutualistic facilities, Sport and health center, Flexi outdoor spaces

TSF LANDFILLS ≈ **720 000** SQM
Landfills that need high control, (mostly) large flat surfaces, and will be directly accessed by actors for reuse and backfill

1 TSF FOR BACKFILLING AND REUSE
2 TSF FOR BACKFILLING AND REUSE
3 DRY STACKING

Fine tailings are handled in two ways: 1. conventional wet tailing storage facility (TSF) as temporary storage of backfilling and reusing purpose; 2. Dry stacking (requires 1/3 of the surface if compared to conventional method). Easier to regenerate. Less space.

COARSE ROCK LANDFILLS ≈ **900 000** SQM
Landfills that go through the process of regeneration from day one, highly shapable and integrated within the masterplan as unique landscape

4 COARSE ROCK
5 REGENERATED

Coarse rock are still partially used for building infrastructure and foundation for facilities. They also are shaped to produce architectural elements and by products. Some have started process of regeneration.

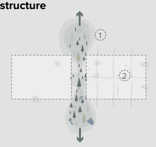
GUIDING PRINCIPLES ↓

ECOLOGICAL LAYER →

E.2 INTEGRATE NATURAL AND MINERAL LANDSCAPES AS KEY ELEMENTS OF ECOLOGICAL INFRASTRUCTURE

Wild vegetation and mineral landscape - the landfills - become active partners in shaping the park's metabolism. Coarse rocks becomes soil, landfills become topography that clean and store water. Biodiversity is supported through large green corridors and green pockets across the mineral park. Ecology is no longer adjacent - it is fully entangled in the park's spatial and operational logic.

E.2.1 Biodiversity corridor and extensive natural infrastructure

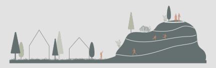


1. A large forest corridor minimise ecosystem impact while providing an important biodiversity link. It also buffers noise and dust from heavy facilities to light ones.
2. Radical integration of green strategies where possible - green pockets, green roofs, rain gardens, bioswales, permeable surfaces

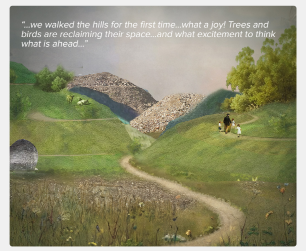
E.2.2 TOOLS: tools to measure, track and inform biodiversity richness and ecological health

Biofactor (UGF) to score quality and quantity of green surfaces; LIM (Landscape Information Modelling) to digitally understand landscape and outdoor spaces; Degree of Soil Permeability Area Factor (BAF) to understand type of surfaces and inform water and flooding strategies; Biodiversity Monitoring through sensors and periodic on site analysis

E.2.3 Activation of coarse rock landfills as recreational landscape



The first coarse landfills (which have been regenerated from day one) start to be central recreational landscapes of the Mineral Park. Activate them through co-design sessions and participatory processes to best understand their potential role.



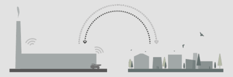
"...we walked the hills for the first time...what a joy! Trees and birds are reclaiming their space...and what excitement to think what is ahead..."

SPATIAL LAYER →

SP.2 ORGANISE SPACE AND ACTORS TO SUPPORT COLLABORATION AND HIGH FLEXIBILITY

The layout must invite exchange, not isolation. Actors are strategically grouped around shared commons to enable material loops, knowledge exchange, and operational overlap. The spatial plan enables flexibility - between clean and dirty, formal and informal, permanent and temporary - and adapts as needs evolve.

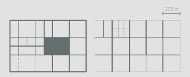
SP.2.1 Clustering facilities by circular synergies and spatial characteristics



1. Group actors and facilities across shared infrastructure according to circular synergies.
2. Separete high risk, machinery-first, noisy environments, from low risk, pedestrian-first spaces, to maximise efficiency, spatial qualities and green integration.

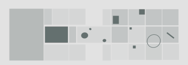
"...the campus facilities are so accessible, we like to move in the Park throughout the day - we usually stay in the shared R&D Labs in the morning and in our office in the afternoon..."

SP.2.2 Flexible grid system for high flexibility and easy future adaptation



Work with flexible spatial grid 200x200 m, not as over imposing system but to ensure flexibility and facilitate future adaptation. This spatial framework is not rigid but adapted to the different characters of the Mineral Park (from heavy industrial to deep green). Its simplicity allow for easy adaptation through time.

SP.2.3 Expanding "connectors"



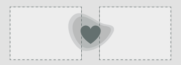
Shared spaces and facilities reduce environmental impact, improve efficiency, and spark unexpected collaboration. Strategically implement connectors across the park as infrastructural and social nodes for everyone. Place them in connection with the central spine.

SOCIAL LAYER →

SO.2 PROVIDE DIVERSE SPACES FOR THE HEALTHY COHABITATION OF MULTIPLE ACTORS

Civic, industrial, and regenerative actors must not just coexist, but thrive together. Shared amenities, porous interfaces, and layered public space make collaboration tangible and humane.

SO.2.1 A central social heart



Introduce a social heart that can host and serve the diverse actors of the Mineral Park ecosystem. Place it at the intersection of heavy and light industries. Keep it deeply connected with nature and provide facilities to stay together e.g. canteen, auditorium, cafes, Mineral Hub, multifunstional event space

SO.2.2 The 5 min campus (a well-being strategy)

Build a distributed system of accessible social facilities. Wherever you work in the Park, you are never more then 5 min walk from nature or from a social amenity.

"...I love to have my lunch at the green heart, and meeting with someone working at the TSFs or on the polymers...I also find the architecture made from the local rocks so inspiring"

SO.2.3 Strong public interface: Become a destination and an example

Develop a network of public accessible programs, from open trails to museums, from education hubs to library, from Mineral restaurant to open workshops, from community hubs to co-working spaces.

*collages are inpired by paintings of Norwegian landscapes: Udsigt over Skarre Sø by P.C. Skovgaard (1844), Landscape Motif from the Numme Valley in Norway by Loachim Frich (1850)

Nome,
Norway

A 100 Years Playbook

To guide how the Green Mineral Park can sustainably grow over time - socially, ecologically, and spatially.

DESIGN STRATEGY
TOOL/BENCHMARK
BIODIVERSITY BOOST
CIRCULARITY BOOST

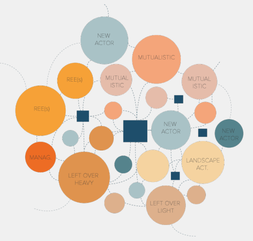
PHASE 03

EXPANDING FUTURES: ADAPTABILITY, LEGACY, AND NEW POTENTIAL

100+ YEARS

Poly Actors & Synergies

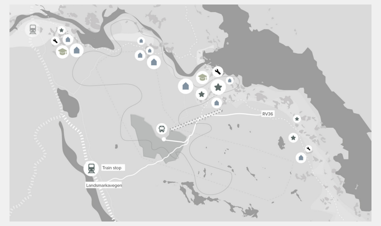
The third phase embraces the unknown. What will happen in 100 years is impossible to predict - but the scale and impact of the Mineral Park demand that we imagine its legacy. This phase proposes strategies for multiple futures: post-extraction transformation, mix-used densification, or new industrial expansions. Rather than offering fixed answers, the playbook demonstrates **how a resilient spatial, ecological, and social framework - laid in earlier phases - can support diverse trajectories.** Key ideas include rewilding and integrating remaining landfills, expanding water systems and wetlands for carbon capture, and densifying within the existing footprint of the park.



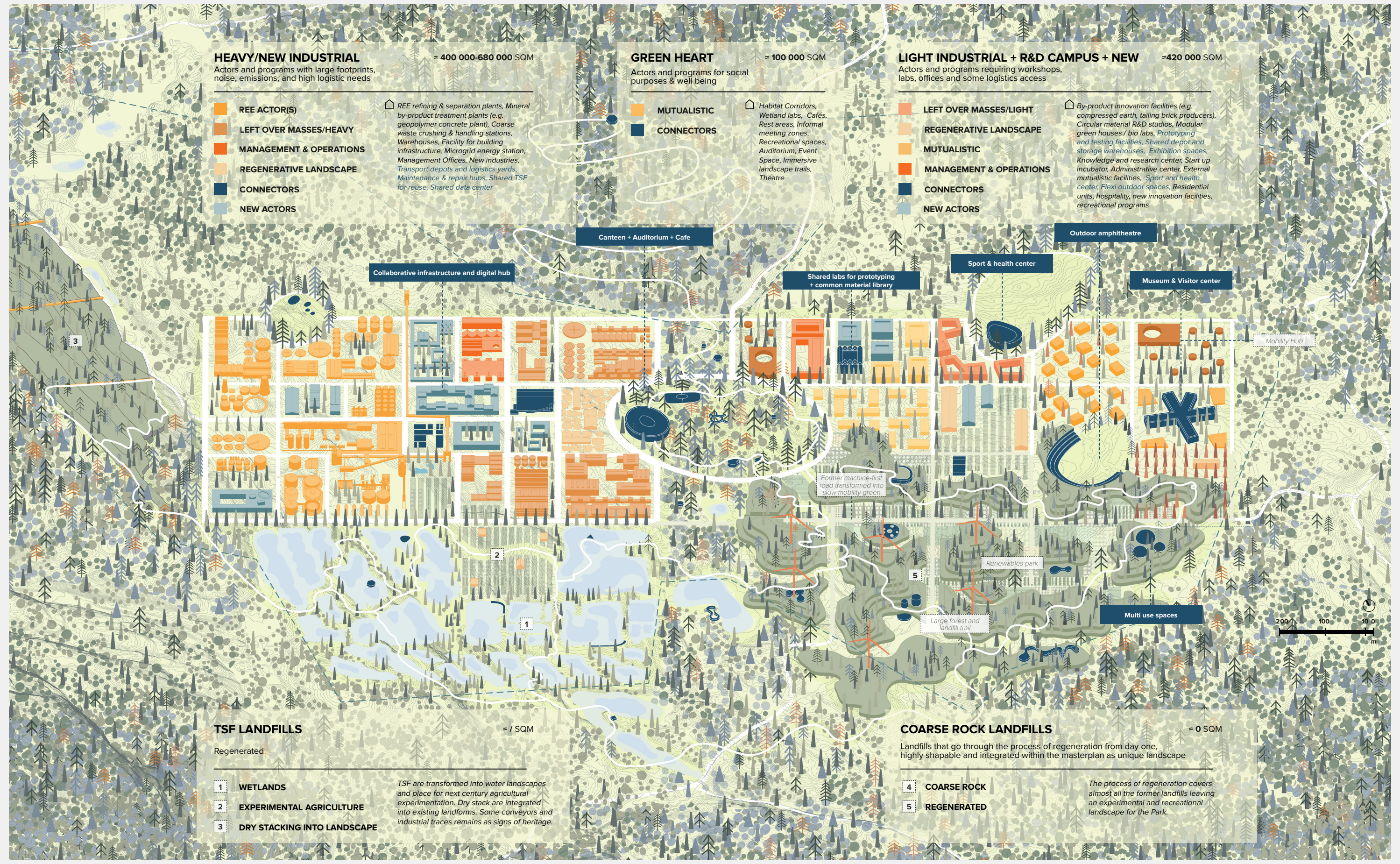
Wider Impact

Long-term futures bring mobility and flexibility: public transport networks connect the park with Nome's towns and activate new forms of access. Reuse, densification, and civic transformation of the site can support experimental housing, rural education, or cultural programs - generating lasting value for the municipality and its communities.

- Public transport loop with new train station
- Distributed Cultural or Educational Satellites
- Readapted Fen Complex tunnel



VISION


Collaborative infrastructure and digital hub
Canteen + Auditorium + Cafe
Shared labs for prototyping + common material library
Sport & health center
Outdoor amphitheatre
Museum & Visitor center
Mobility Hub
Former machine-first road transformed into slow mobility green
Renewables park
Large forest and landfill trail
Multi use spaces
1
2
3
5
200
100
10 0
m

HEAVY/NEW INDUSTRIAL ≈ **400 000-680 000** SQM
Actors and programs with large footprints, noise, emissions, and high logistic needs

■ REE ACTOR(S)
■ LEFT OVER MASSES/HEAVY
■ MANAGEMENT & OPERATIONS
■ REGENERATIVE LANDSCAPE
■ CONNECTORS
■ NEW ACTORS

REE refining & separation plants, Mineral by-product treatment plants (e.g. geopolymer concrete plant), Coarse waste crushing & handling stations, Warehouses, Facility for building infrastructure, Microgrid energy station, Management Offices, New industries, Transport depots and logistics yards, Maintenance & repair hubs, Shared TSF for reuse, Shared data center

GREEN HEART ≈ **100 000** SQM
Actors and programs for social purposes & well being

■ MUTUALISTIC
■ CONNECTORS

Habitat Corridors, Wetland labs, Cafés, Rest areas, Informal meeting zones, Recreational spaces, Auditorium, Event Space, Immersive landscape trails, Theatre

LIGHT INDUSTRIAL + R&D CAMPUS + NEW ≈**420 000** SQM
Actors and programs requiring workshops, labs, offices and some logistics access

■ LEFT OVER MASSES/LIGHT
■ REGENERATIVE LANDSCAPE
■ MUTUALISTIC
■ MANAGEMENT & OPERATIONS
■ CONNECTORS
■ NEW ACTORS

By-product innovation facilities (e.g. compressed earth, tailing brick producers), Circular material R&D studios, Modular green houses / bio labs, Prototyping and testing facilities, Shared depot and storage warehouses, Exhibition spaces, Knowledge and research center, Start up incubator, Administrative center, External mutualistic facilities, Sport and health center, Flexi outdoor spaces, Residential units, hospitality, new innovation facilities, recreational programs

TSF LANDFILLS ≈ / SQM
Regenerated

1 WETLANDS
2 EXPERIMENTAL AGRICULTURE
3 DRY STACKING INTO LANDSCAPE

TSF are transformed into water landscapes and place for next century agricultural experimentation. Dry stack are integrated into existing landforms. Some conveyors and industrial traces remains as signs of heritage.

COARSE ROCK LANDFILLS ≈ **0** SQM
Landfills that go through the process of regeneration from day one, highly shapable and integrated within the masterplan as unique landscape

4 COARSE ROCK
5 REGENERATED

The process of regeneration covers almost all the former landfills leaving an experimental and recreational landscape for the Park.

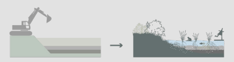
GUIDING PRINCIPLES ↓

ECOLOGICAL LAYER →

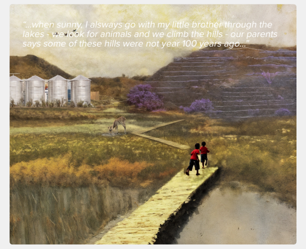
E.3 EVOLVE THE PARK INTO A LIVING SYSTEM OF REGENERATIVE TERRAINS AND LANDSCAPE LABS

Over time, what were once technical landscapes - tailings, roads, runoff basins - transform into new ecologies and opportunity for new exploration. Climate resilience, carbon care, and rewilded landforms define the park's long-term metabolism. Using landscape as a lab remains at the center of Mineral Park's DNA.

E.3.1 Hydrological rewilding and reclaim of remaining TSF

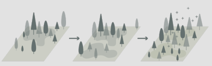


Restore altered water systems into seasonal ponds, wet meadows, or groundwater recharge fields. Use pioneer species, mycelium networks, bacteria, or phytoremediation crops to break down mineral waste over time and shape remaining tailings into biodiverse wetland.



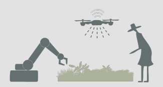
"...when sunny, I alsways go with my little brother through the lakes - we look for animals and we climb the hills - our parents says some of these hills were not year 100 years ago..."

E.3.2 100 years, 1.000.000 plants (set rewilding benchmarks)



Benchmark: in 100 years, a hundred million plants has to appear on the initial masetplan footprint. Try to define and implement this wider benchmarks early on to guide an ambitious development over the century.

E.3.3 Creative farming & regenerative agriculture



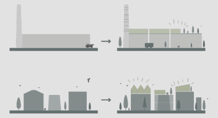
Climate change transformed Norway weather into a more mite temperatures that opens new agricultural possibility. Use the experimental legacy of the site to explore new types of farming and agriculture.

SPATIAL LAYER →

SP.3 EXPLORE THE SPATIAL FRAMEWORK AS PLATFORM FOR EXPANDED USES AND ADAPTIVE REUSE

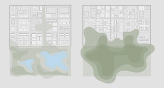
New programs and needs are implemented without starting over, but by adapting existing spatial infrastructure, architecture and landscape. Expansion beyond the limit of the park should be avoided - if necessary, part of former landfills can serve as space for expansion without the need of clearing new forest .

SP.3.1 Radical reuse and adaptation of buildings and infrastructures



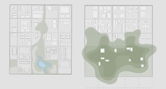
Rather than demolishing or expanding on a large scale, use the flexible spatial framework built in Phase 2 to build on top of existing buildings and infrastructure. Prioritise densification and radical reuse.

SP.3.2 Scenario 1: Densification within existing footprint

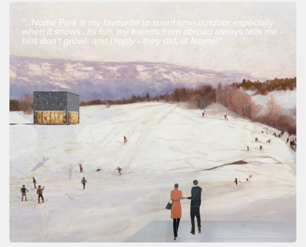


Preferably, don't expand beyond the initial footprint; instead, densify and adapt existing typologies. Landfills become large areas of recreation, carbon capture and natural ecosystems.

SP.3.3 Scenario 2: Expansion over landfills



If expansion is needed, limit it to the landfill's footprint to avoid clearing new forest. Take a nature-first approach by integrating new buildings and infrastructure according to the spatial qualities of the landfill site (organic and hilly to the west, orthogonal and flat to the east).



"...Nome Park is my favourite to spent time outdoor especially when it snows...its fun, my friends from abroad always tells me - hills don't grow!- and I reply - they did, at Nome!"

SOCIAL LAYER →

SO.3 ACTIVATE NEW FORMS OF SHARED STEWARDSHIP AND COLLECTIVE AGENCY

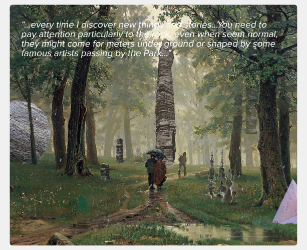
In the long time, governance shifts. The park becomes a commons - managed by citizens, researchers, and local actors who care for it, program it, and imagine what comes next.

SO.3.1 Commons Stewardship Framework

Zones of the park are co-managed by consortia (e.g. university + NGO + local cooperative) for specific uses (e.g. regenerative farming, climate research, cultural programming). Allow communities, artists, or even schools to steward portions of the park under non-extractive, time-based agreements.

SO.3.2 Living archive and heritage memory

Keep the memory and evolution of the park alive through digital/physical traces, public rituals, and documentation hubs.



"...every time I discover new things and stories...You need to pay attention particularly to the rock, even when seem normal, they might come for meters under ground or shaped by some famous artists passing by the Park..."

X.X.X ...

?

What other design strategies can be relevant for the Playbook? What else is relevant when thinking in 100+ years time frame? How can we ensure a co-design process that includes local citizens and future generations? The Playbook is a call to action for a collaborative process.

*collages are inpired by paintings of Norwegian landscapes: From Jæren by Kitty Kielland (1880), Winter in Norway by Nils Hansteen (1855)